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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,624	01/10/2002	Takeyoshi Isogai	111709	5208

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

NGUYEN, DONGHAI D

ART UNIT PAPER NUMBER

3729

DATE MAILED: 02/09/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/041,624	ISOGAI ET AL.	
	Examiner	Art Unit	
	Donghai D. Nguyen	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 13-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-12) in Paper No. 4 is acknowledged. The traversal is on the ground(s) that the search and examination of the entire application could be made without serious burden. This is not found persuasive because they are three distinct inventions having separating classification and status thereof and they require different field of search.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. The drawings are objected to because there are many errors in the drawing such as they fail to show filter "297" as described in the specification, reference characters "184" and "192" have both been used to designate suction nozzle, etc. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: such as, the phrase "in a hoop" (Spec page 20, line 1) should be --in a loop--.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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The following title is suggested: --A METHOD OF DETECTING POSITION OF ROTATION AXIS OF SUCTION NOZZLE--.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrases “the calibration gauge” (claim 11, lines 2-3) and “the calibration member” (claim 11, line 3 and claim 12, line 6) lack antecedent basis.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,878,484 to Araya et al.

Araya et al disclose a method of detecting a position of a rotation axis of a suction nozzle (38) of an electric-component mounting apparatus, the suction nozzle holding, by suction, an electric component, and being rotated about the rotation axis thereof to rotate the electric

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component held thereby, so that the electric component rotated is mounted on a component-mounting surface of a circuit substrate, the method comprising the step of: detecting, on a position-detecting plane including the component-mounting surface of the circuit substrate, the position of the rotation axis of the suction nozzle (See Fig. 11 and Col. 10, lines 32-38).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-6 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,438,425 B1 to Kawada

The applied reference has a common Assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Kawada discloses a method of detecting a position of a rotation axis of a suction nozzle (62) of an electric-component mounting apparatus (Fig. 1), the suction nozzle holding, by suction, an electric component (EC 28), and being rotated about the rotation axis thereof to rotate the electric component held thereby (Col. 5, lines 45-49), so that the electric

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component rotated is mounted on a component-mounting surface of a circuit substrate (16), the method comprising the step of: detecting (Col. 6, lines 13-15), on a position-detecting plane including the component-mounting surface of the circuit substrate (16), the position of the rotation axis of the suction nozzle.

Regarding claim 2, Kawada discloses the step of detecting the position comprises: lowering the suction nozzle taking a substantially vertical posture, to position the suction nozzle at an image-taking position where a lower end surface of the suction nozzle is substantially level with the component-mounting surface of the circuit substrate (Figs. 4 and 13); taking, with an image-taking device (66/68), a first image of the lower end surface of the suction nozzle positioned at the image-taking position; rotating, at least one time, the suction nozzle about the rotation axis thereof by a predetermined angle; taking, with the image-taking device, a second image of the lower end surface of the suction nozzle rotated by the predetermined angle; and processing the first image and the second image, to determine the position of the rotation axis of the suction nozzle (Col. 4, lines 17-26).

Regarding claim 3, Kawada disclose the step of detecting the position comprises steps of: preparing a calibration member (16) having, substantially on the position-detecting plane, a support surface (Fig. 1) and at least one first positioning reference (102); placing, on the support surface, a calibration gauge (100) having at least one second positioning reference (other 102); taking, with an image-taking device (66/68), a first image of the first positioning image and the second positioning image; holding, with the suction nozzle, the calibration gauge to move the

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gauge off the support surface; rotating the suction nozzle holding the calibration gauge, about the rotation axis of the nozzle, to rotate the gauge by a predetermined angle; placing, with the suction nozzle, the calibration gauge rotated by the predetermined angle, on the support surface; taking, with the image-taking device, a second image of the first positioning image and the second positioning image (Col. 18, line 65 to Col. 19, line 8); and processing the first image and the second image, to determine a relative position between a reference point of the calibration member and the position of the rotation axis of the suction nozzle (Col. 19, lines 9-27).

Regarding claim 5, Kawada discloses a method of detecting a position of a rotation axis of a suction nozzle (62) of an electric-component mounting apparatus (Fig. 1), the suction nozzle holding, by suction, an electric component (28), the method comprising the steps of: preparing a calibration member (16) having a support surface parallel (Fig. 1) to the component-mounting surface, and having at least one first positioning reference (102); placing, on the support surface, a calibration gauge (100) having at least one second positioning reference (other 102); taking, with the fiducial-mark-image taking device (66), a first image of the first positioning image and the second positioning image; holding, with the suction nozzle (62), the calibration gauge to move the gauge off the support surface; rotating (col. 19, lines 4-5) the suction nozzle holding the calibration gauge, about the rotation axis of the nozzle, to rotate the gauge by a predetermined angle; placing, with the suction nozzle, the calibration gauge rotated by the predetermined angle, on the support surface; taking, with the fiducial-mark-image taking device, a second image of the first positioning image and the second positioning image; and processing the first image and the second image, to determine a relative position between a reference point

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of the calibration member and the position of the rotation axis of the suction nozzle (see Figs. 8-12 and col. 18, line 59 to col. 19, line 26).

Regarding claims 4 and 6, Kawada disclose the step of detecting the position comprises repeating, at least one more time, the step of holding the calibration gauge, the step of rotating the suction nozzle, the step of placing the calibration gauge, and the step of taking the second image, and wherein the step of processing the first and second images comprises processing the first image and at least two second images to determine the relative position between the reference point of the calibration member and the position of the rotation axis of the suction nozzle (Col. 16, lines 34-40).

Regarding claim 11, see col. 30, lines 53-54.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawada.

Regarding claim 12, Kawada discloses taking, with a fiducial-mark-image taking device (66), which takes an image of at least one fiducial-mark (102) provided on the component-mounting surface of the circuit substrate. Kawada doesn't disclose an image of the first

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positioning reference of the calibration member; the step of taking with a fiducial-mark-image taking device (66) which takes an image of the first positioning reference of the calibration member; and determining, based on the taken image of the first positioning reference, an error of a relative position between the fiducial-mark-image taking device and the calibration member.

However, Kawada in Col.1, lines 22-38 of the prior art section discloses the image of the first positioning reference of the calibration member; the step of taking using fiducial-mark-image taking device to takes the image of the first positioning reference of the calibration member; and determining, based on the taken image of the first positioning reference, the error of a relative position between the fiducial-mark-image taking device and the calibration member. It would have been obvious to modify Kawada to have the positioning reference on the calibration member; the step of taking takes the image of the first positioning reference of the calibration member with a fiducial-mark-image taking device (66); and determining, based on the taken image of the first positioning reference, an error of a relative position between the fiducial-mark-image taking device and the calibration member.

Allowable Subject Matter

13. Claims 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:
The prior art of record fails to show, teach or suggest, alone or in conjunction, the calibration

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member and the calibration gauge having plurality of reference marks or hole formed through the thickness thereof

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN



PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700